DOCUMENT RESUME

ED 107 134 FL 006 898

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TITLE The Acquisition of the Concept of Grammatical Gender in Monolingual and Bilingual Speakers of Spanish.
PUB DATE 1 Apr 75
NOTE 21p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, D.C., April 1975)

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS Adjectives; *Bilingualism; Child Language; *Concept Formation; Determiners (Languages); Grammar; *Language Development; Language Patterns; Language Research; Monolingualism; Morphology (Languages); Native Speakers; Nominals; *Psycholinguistics; Spanish; *Spanish Speaking
IDENTIFIERS *Grammatical Gender

ABSTRACT

Bull (1965) has proposed that grammatical gender in Spanish is not an intrinsic characteristic of nouns but rather a matter of matching terminal sounds of nouns with those of adjectives and determiners. One implication of this theory is that the child has a cognitive understanding of the matching of terminal noun sounds with particular adjective and determiner forms. This paper seeks to ascertain whether such an understanding of Spanish rules is reached by children and at what age level. A test was administered to 315 Spanish-surnamed children in prekindergarten through Grade 3, divided into English monolingual, Spanish monolingual, and dominant Spanish/English bilingual groups. The task was to assign adjectives and determiners to nonsense words. Results support the first hypothesis, that both bilinguals and Spanish monolinguals would match the Spanish nonsense word to an appropriate adjective or determiner. The second hypothesis, that monolinguals will master this rule before bilinguals, also seems to be supported, but only at the prekindergarten stage. The third hypothesis tested, that the response pattern is not affected by the type of stimulus presented, is also supported, indicating that the methodology used is a viable one. (AM)

Session 11.15

THE ACQUISITION OF THE CONCEPT OF GRAMMATICAL GENDER IN MONOLINGUAL AND BILINGUAL SPEAKERS OF SPANISH

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Theoretical Framework and Objectives

This study is concerned with the acquisition of the concept of 'grammatical gender' by bilingual and monolingual speakers of Spanish. Grammatical gender refers to a characteristic of certain Spanish language forms. For the purpose of this study, the language forms under discussion are nouns.

In Spanish certain nouns are used with the 'masculine' form of determiners and adjectives. For example, el reloj (the watch), ese día (that day), este monje bueno (this good monk). Other nouns are used with the 'femenine' form of determiners and adjectives. For example, la bondad (kindness), esa semana (that week), esa monja buena (that good nun).

Spanish grammarians have traditionally considered the grammatical gender of nouns an intrinsic characteristic of Spanish nouns. Some patterns which help explain this intrinsic characteristic have been found . For instance, many nouns ending in the vowel a are found to be 'femenine' and many nouns ending in the vowel o are found to be 'masculine'. Exceptions to these generalizations abound and no generalization exists for nouns ending in other vowels and consonants. Nouns refering to persons with specific sex usually are masculine or femenine depending on the sex of the referent of the noun. Exceptions, however, to this rule also abound.

Learning the correct gender of nouns by native or non-native speakers of Spanish has usually been conceptualized as a matter of repetition and trial-and-error. The child is expected to learn the noun form and its intrinsic gender from other speakers in his environment. Imitation--by way of repetition--of these speakers then follows. If a new noun is learned in a context in which there is no indication of its gender--for example, if the child hears for the first time "Tiene luge" (He has a sleigh)--the child is expected to use the noun "luge" in novel utterances of his own correctly or incorrectly. Positive or negative reinforcement of his use of the noun insures learning of the correct form. Thus, if the child says "Su luge es rojo", using "luge" for the first time after

Paper presented at the annual meeting of the American Educational Research Association. Washington D.C., April 1, 1975.

having heard this noun only once as stated above, his use of the noun correctly will be positively reinforced by successful communication.

Professor William E. Bull (1965:105-110) has proposed that the concept of 'grammatical gender' is not an intrinsic property of Spanish nouns. Rather, it is a matter of matching the terminal sounds of nouns with the terminal sounds of adjectives and determiners. He conducted a study and found that if the final letter(s) of the noun is(are) -a, -d, -ción/-sión, -sis, or -itis, 98% of these nouns matched the -a form of adjective and determiner pairs--that is, of adjectives and determiners having two forms: bueno/buena. Thus, la casa (the house), buena ciudad (good city), esa oración larga (that long sentence) and esta crisis abrumadora (this overwhelming crisis) follow the pattern indicated above.

Professor Bull also found that if the final letter of the noun is -e, -l, -n, -o, -r, or -s, 96% of these nouns matched forms of adjective and determiner pairs ending in -e, -l, -n, -o, -r, and -s. Thus, el diente ese (that tooth), el árbol alemán (the German tree), un libro inglés (a book from England), el lugar alto (the high place) follow this second pattern.

The implications of Bull's research for the acquisition of the concept of grammatical gender are many. Of relevance to the present study is the implication that the child may have a cognitive--although intuitive--understanding of the matching of terminal sounds of Spanish nouns with the terminal sounds of adjectives and determiners.

This study is the first attempt to ascertain if such a cognitive understanding is reached by children and, if so, at what age level it is reached by bilingual and monolingual speakers of Spanish. Factors affecting acquisition are also investigated.

Studies of Language Acquisition.

Research on language acquisition has demonstrated that children learn at an early age the arbitrary matching patterns of the forms of their language. The studies on the pluralization of nouns in English and the learning of the pluralization rules by English speakers a case in point (Anisfeld and Tucker:1967). Other investigations concerning the measurement of first and second language fluency and dominance also reveal that children learn many language rules at a very early age.

This study is the first attempt to ascertain the acquisition patterns of the specific language rules dealing with the "gender" of Spanish nouns postulated by William E. Bull.

Hypotheses.

Several hypotheses were tested in this investigation. This

paper presents the results obtained in testing the first two hypotheses and the last hypothesis given next.

1. Both bilingual and monolingual speakers of Spanish will match Spanish nonsense nouns to appropriate determiner and adjective forms following Bull's terminal sound matching patterns.

2. Monolingual Spanish speakers will achieve mastery of the terminal sound matching patterns of Spanish nouns earlier than bilingual Spanish speakers.

3. There will be an order to the matching patterns learned. The -a, -ción/-sión patterns will be learned earlier than the -d, -sis, -itis patterns. The -o, -n, -s patterns will be learned earlier than the -e, -l, -r patterns.

4. There will be no effect due to the type of stimulus presentation on the response patterns of the children tested.

The expectationspresented in the hypotheses result from the theoretical work of Bull and from the studies of language acquisition briefly described. It is hypothesized that children will react to the terminal sound of the nonsense nouns presented and that they will correctly match, by analogy with known nouns, the corresponding forms of adjectives and determiners as theorized by Bull.

It is also hypothesized that monolingual children will be superior to bilingual children since monolinguals have more exposure to noun matching patterns in Spanish and more practice in using these patterns.

It is also hypothesized that there will be an order to the learning of the matching patterns. This hypothesis reflects the number of nouns with certain characteristics in the Spanish language and their frequency of use. It is finally hypothesized that the mode of presentation has no influence on the response patterns of the children tested.

Data sources.

In this study a total of 315 Spanish surnamed children in grades Pre K, K, 1, 2, and 3 were tested. The children came from three different schools in Los Angeles County. Specifically, two of the schools were in the barrios of the city of Los Angeles and one was in the city of Pomona. Children at all grade levels indicated were tested in all schools.

The participating schools were selected by District personnel from a list of 15 possible schools. The Principal of each of the participating schools then designated a classroom (or two classrooms

for Pre K and K) for testing by the researchers. The criterion used by the individual Principals was "teacher cooperation", that is, the extent to which each Principal thought that the designated classroom teacher would be interested in participating in the study within the sampling needs of the researchers. The children tested, thus, were members of intact groups at each grade level who were present on the day the researchers conducted the testing.

After the testing the teacher classified the children in their individual classrooms into three broad categories--DOMINANT SPANISH MONOLINGUAL, DOMINANT SPANISH/ENGLISH BILINGUAL, ENGLISH DOMINANT-- and four language fluency levels. Summary of the population tested appears in Table 1.

Method.

A series of nonsense words having the terminal sound characteristics needed for appropriate matching were created for this study. Pictorial definitions of these words were selected. All the referents of these nonsense words are objects. None is a person or an animal which might be easily identified by sex. These nonsense words and their pictorial definitions are given in Table 2.

The procedure used in gathering the data was as follows: 1. The researcher sat outside the classroom or inside the classroom in a secluded area--a corner of the room. 2. The teacher sent to the researcher one child at a time. 3. The researcher began the session by greeting the child by his first name. The researcher then assigned a number to the child which was used in any other identification of the child. 4. The researcher asked the following questions:

a) ¿Te gusta mirar la televisión?
Do you like to watch TV?

b) ¿Qué programa te gusta más?
Which one is your favorite program?

c) ¿Y el radio, oyes también el radio?
Do you listen to the radio too?

d) ¿Cuál es tu canción favorita de las que oyes en el radio?
Which is your favorite radio song?

5. The researcher then introduced the child to the task to be performed. The task was presented via tape recorder.

The child was asked to repeat after the model the nonsense words used in the experiment. Each word was repeated twice. Then sixteen sets of three pictures each were shown to the child, one set at a time. The first three sets contained common objects known to the child and served as trials to practice the task. The next twelve sets contained the new nonsense words.

The three pictures of each set had a characteristic in common

such as size, color, etc. This characteristic determined the adjective used for each of the sets. The words were presented in the following order with the corresponding adjectives as shown in Table 3. The underlined form is the correct response.

The first three sets give practice in all of the possible response combinations presented. The correct answer to the first set is 'amarilla' and this answer is different from the previous stimulus--'perro amarillo'. The adjective appears after the noun. The correct answer to the second set is 'grande' and this answer is the same as the previous stimulus--'hoja grande'. The adjective appears after the noun. The correct answer to the third set is 'nuestro' and this answer is different from the previous stimulus--'nuestra pluma'. The adjective appears before the noun.

Sets with new nonsense words (4-15 in Table 3) require answers with o and a adjective forms alternating in succession. The stimulus heard before the last word was different for sets 4, 5, 8, 9, and 12-15, and the same for sets 6, 7, 10, 11. The adjective usually followed the noun except for sets 8, 14 and 15.

All stimuli were presented through tape recorder. If a child did not respond to the nonsense word of each set in the time allowed in the tape (apprx. 10 secs.) the researcher stopped the tape and repeated the stimulus at least five times to try to elicit a response from the child. The researcher would nod or positively reinforce the child after each response given by saying "Fine" or "Good".

Testing sessions usually lasted over half a school day per classroom. After each testing session the researcher asked the teacher to classify the children according to language dominance and proficiency as indicated in Table 1. All testing was done during the third and fourth month of the current school year.

Results.

First Hypothesis: Both bilingual and monolingual speakers of Spanish will match Spanish nonsense nouns to appropriate determiner and adjective forms following Bull's terminal sound matching patterns.

An Analysis of Variance was performed on the proportion of correct responses given by the children to all 15 words. (See Table 4) Both the main effects and the interaction prove to be highly significant. From Figure 1 it is easily observed that both monolinguals and bilinguals do significantly better than English dominant children at both grade levels used in the analysis.

The figures presented lend support to the first hypothesis of this investigation. Both bilinguals and monolinguals matched

the Spanish nonsense nouns to appropriate determiner and adjective forms following Bull's terminal sound matching patterns. The mean proportion of correct responses to all words is above 50% for both monolinguals and bilinguals at both grade levels. English dominant speakers score significantly below 50% correct at K-1 grade level and at the 50% mark at 2-3 grade level.

Comparison of bilinguals and monolinguals in a separate analysis of variance yields the following results. (See Table 4A) The differences between monolinguals and bilinguals are not significant. Bilinguals, however, score significantly higher than monolinguals at the K-1 grade level while this pattern is reversed at the 2-3 grade level, that is, monolingual scores significantly higher than bilinguals.

Inspection of the graph presented in Figure 1 shows that while there is a significant difference among the monolinguals across grade levels--children in upper grades scoring higher than children in lower grades--this trend is reversed for the bilinguals. Thus bilinguals score higher in the lower grades than in the upper grades.

The o and a matching patterns were analyzed separately. There were 7 'o' matching words and 7 'a' matching words. The second set is eliminated from this analysis since it has no matching pattern (casa/hoja/lápiz grande). Results appear in Tables 5 and 6.

The same pattern of significant main effects and interactions is repeated. Comparing the mean proportions given in Table 4 with the one given in Table 5 we observe a marked increase in the proportion of correct responses for the monolinguals and bilinguals while English dominants tend to score lower. These results tend to support the first hypothesis of this investigation. For 'a' matching patterns the only significant result is due to grade level. Children in the upper grades, across all groups of language dominancy, score significantly higher than children in the lower grades. All mean proportions are below 50% correct. Bilinguals, as has been the case before, score higher in grades K-1 than in grades 2-3. The results of this analysis appear to indicate that bilinguals and monolinguals tend to master the 'a' matching patterns hypothesized by Bull. However, their level of mastery is not as high as that reached by the same children with 'o' matching patterns.

Second hypothesis: Monolingual Spanish speakers will achieve mastery of the terminal sound matching patterns of Spanish nouns earlier than bilinguals.

In all of the analyses thus far presented, bilinguals have consistently performed better than monolinguals in grades K-1 while the reverse pattern of performance is observed for grades 2-3. To ascertain in more detail the nature of this relationship, an analysis of variance was conducted on the scores of Pre-K and K children. Language dominance was defined in terms of levels of fluency (See Table 1). Five levels were identified.

The results presented in Table 7 appear to indicate only a significant interaction. Inspection of Figure 4 reveals that this is the case: bilinguals and monolingulas score higher than English dominant children. Monolinguals, however, score significantly higher than bilinguals at the PreK level while Bilinguals are significantly superior to monolinguals at the K level. The results appear to indicate the effects of 'retroactive inhibition', that is, new learning interfering with what has already been learned. Monolingual children entering school in PreK are confronted with a new language which has no sound matching patterns for determiner/adjective and nouns (Compare 'red book'/'red door' with'libro rojo'/'puerta roja'). The child has to learn to match the same modifier form to nouns that in Spanish are radically different. The results appear to indicate that this new learning interferes, by the time children reach Kindergarten, with the learning and retention of Spanish noun matching patterns. The bilingual PreK child, however, appears to have solved the problems confronting the monolingual at a much earlier stage. But, because of this bilinguality, he has not had a chance to learn and practice as many patterns as the monolingual child has learned. This bilingual child progresses from PreK to K in a normal fashion learning both English and Spanish rather well.

The superiority of the bilingual child in Grades K-1, as observed in previous analyses of variance, may be explained in the same fashion. Bilinguals appear to be superior because of the retroactive inhibition which monolinguals experience as they move from K to First grade.

The second hypothesis postulated in this study appears to be supported by the results obtained at the earliest point of entrance into the school environment. Since at higher grade levels no control was exercised on the time of entrance into school, it is difficult to decide, on the basis of the evidence, if the hypothesis is supported or not.

Fourth hypothesis: There will be no effect due to the type of stimulus presentation on the response pattern of the children tested.

The proportion of correct responses for the sets in which the stimulus and the response were the SAME were analyzed and no significant differences were found. (See Table 8A)

The proportion of correct responses for the sets in which the stimulus and the response were DIFFERENT were analyzed. Only a significant interaction is found indicating that bilinguals score higher than monolinguals at the K level while Monolinguals score higher at the Second grade level. (See Table B)

Conclusions.

Evidence has been presented that gives strong support to the acquisition of the specific sound matching patterns postulated

by Bull. The overall superiority of both bilinguals and monolinguals in learning these patterns appear to support the contention that intuitively, these children have abstracted the sound matching patterns postulated and can apply them to the matching of new words.

The fact that the children performed better in the matching of the 'o' patterns than the 'a' patterns is interesting since it would appear that the 'o' patterns are more complex. Further investigation of this problem is needed. It is important, however, to state that the concept of 'grammatical gender' as defined by most traditional grammarians should be revised in light of the findings presented here.

Evidence has been presented that strongly supports the view that Monolinguals achieve mastery of the sound matching patterns earlier than bilinguals. The question remains, however, as to how the learning of a new language interferes with the earlier superiority of the monolinguals. Further studies of this complex problem are needed.

Further study of the lack of progress of bilingual children as they move through the different grade levels is also needed. Many of the children participating in this study were in bilingual programs and all of the children were in schools where Spanish was the predominant language of the parents and the second language of most teachers and administrators. There would seem to be no reason for a decline in the initial superiority of bilinguals in mastering sound matching patterns. The type of classroom instruction affecting the observed decline should be investigated.

Finally evidence has been presented that supports the view that the methodology used in this study is a viable research tool. More refinement of the method is needed, however, to clarify the reasons for the significant interaction observed.

References

Bull, William E. Spanish for Teachers. The Ronald Press Company, New York, 1965.

Anisfeld, M., and Tucker, R.G. English pluralization rules of six year old children. Child Development, 1967, 38, 1202-1217.

Table 1. Description of Population.

	Dominant Spanish Monolingual				Dominant Sp./Eng Bilingual				Dominant English		
	Communicates mostly in Spanish. Very limited use of English		Talks mostly in Spanish; Uses English on limited basis		Talks mostly in Spanish. Is fair in use of English		Communicates in both Spanish and English with ease.				
	M	F	M	F	M	F	M	F	M	F	Total
Pre K K	18	12	14	13	6	9	6	3	1	4	86
1	11	2	3	11	7	14	17	15	2	1	83
2	6	7	8	4	5	5	10	17	7	6	75
3	6	13	7	5	3	5	17	7	3	5	71
Total	41	34	32	33	21	33	50	42	13	16	315

Table 2. Nonsense Spanish words and their pictorial definitions.

Nonsense word	Definition
1. estón	surgical utensil
2. saro	vine
3. alicutar	geometric figure
4. périces	rare bird
5. oluche	food
6. zomul	precious stone
7. leta	metal
8. pártara	jar
9. asílisis	design
10. ducion	high tower
11. perantud	elephant tooth
12. prasitis	blackboard hook
13. áluta	fly catcher

Table 3. Stimulus and response for each set.

Stimulus:	Expected response: A matching	Expected response: O matching	Type of previous stimulus:	Position of adjective:
1. Camisa amarilla perro amarillo casa	amarilla		diff.	after
2. Casa grande hoja grande lápiz	grande		same	after
3. Nuestro cuaderno nuestra pluma ..... lloro		nuestro	diff.	before
4. Plumero limpiador escoba limpiadora estón.....		limpiador	diff.	after
5. Regla inglesa libro inglés prasitis	inglesa		diff.	after
6. Hoja ancha pomo ancho saro		ancho	same	after
7. Clavo afilado cuchilla afilada perantud	afilada		same	after
8. Ese lápiz esa pluma ..... alicutar		ese	diff.	before
9. Escalera alta pino alto ducion	alta		diff.	after
10. Hormiga gordona gusano gordón périces		gordón	same	after
11. Lápiz negro taza negra asílisis	negra		same	after
12. Helado frío agua fría Oluche		frío	diff.	after

13. Pluma roja lápiz rojo pártara	roja		diff.	after
14. Mal sillón mala ventana ..... zomul		mal	diff.	before
15. Buena casa Buen dinero ..... leta	buena		diff.	before
16. El mapa la casa .... áluta		el	diff.	before

Table 4. Proportion of correct responses to all words.

	Monolinguals		Bilinguals		English Dominant	
	K-1	2-3	K-1	2-3	K-1	2-3
Means	.5256	.6546	.6178	.6050	.3840	.5019
S.D.	.1641	.1179	.1533	.1452	.0740	.1537
freq.	66	56	71	69	5	21

Bartlett test = 9.2038

F = 1.7983

df = 5

p = .1095

Source	SS	df	MS	F	p
Mean	34.9865	1	34.9865	1620.0537	0.000
D	.4123	2	.2061	9.5462	0.000
G	.1772	1	.1772	8.2095	0.004
DG	.3427	2	.1713	7.9345	0.000
Error	.0900	282	.0216		

Figure 1.

X = Mono
X = Biling
X = Eng. D.

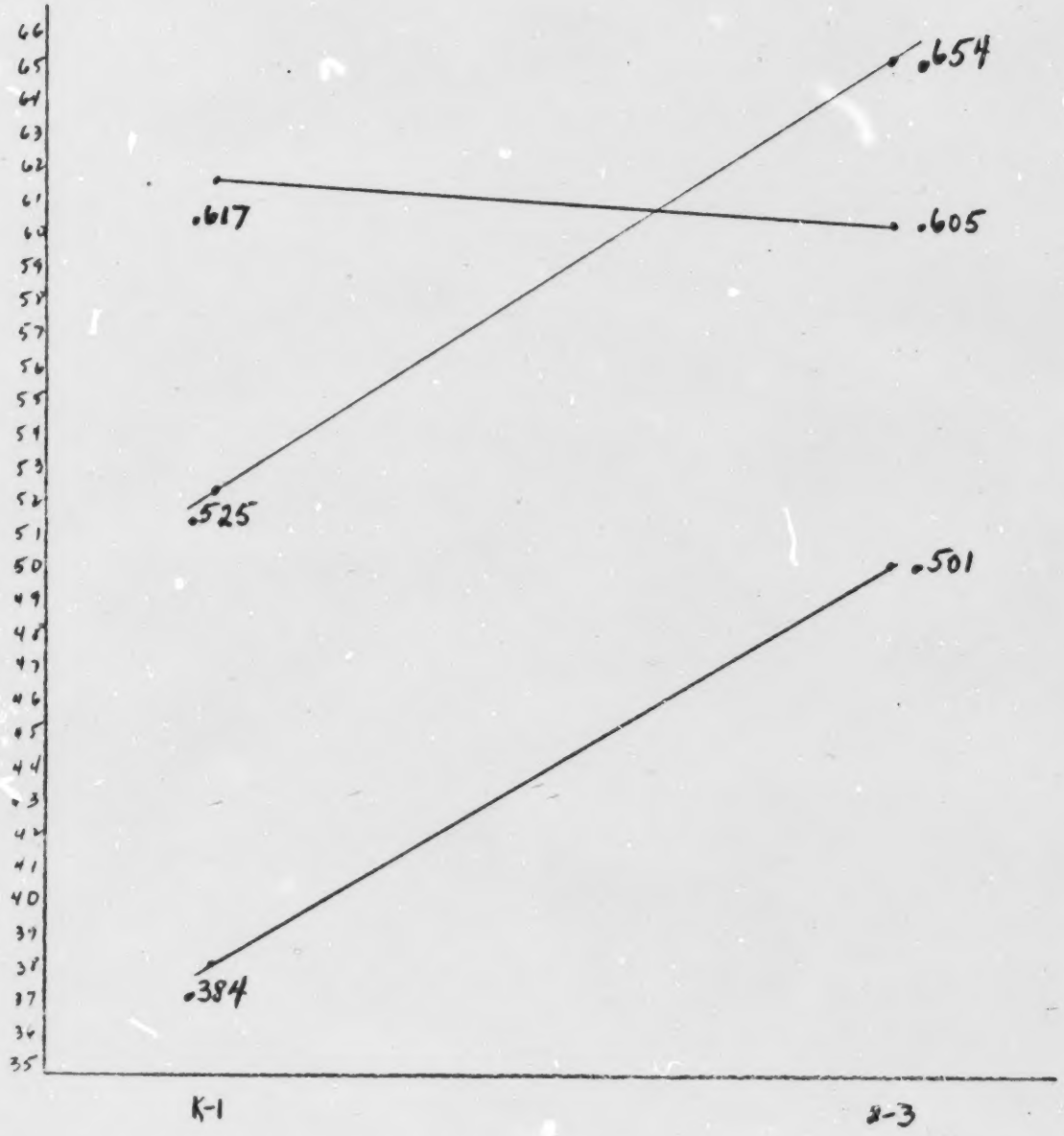


Table 4A. Monolinguals and Bilinguals - (K-1, 2-3).

Source	SS	df	MS	F	p.
Mean	93.7758	1	93.7758	4324.0898	0.000
D	.0295	1	.0295	1.3644	0.244
G	.2193	1	.2193	10.1153	0.002
DG	.3266	1	.3266	15.0641	0.000
Error	5.5452	258	.0216		

Table 5. Proportion of correct responses to 'o' matching patterns

	Monolinguals		Bilinguals		English Dominant	
	K-1	2-3	K-1	2-3	K-1	2-3
Mean	.6060	.7805	.7052	.6844	.3700	.4880
S.D.	.2569	.1862	.2373	.2361	.0821	.2187
freq	66	56	71	69	5	21

28

Bartlett test = 11.0798

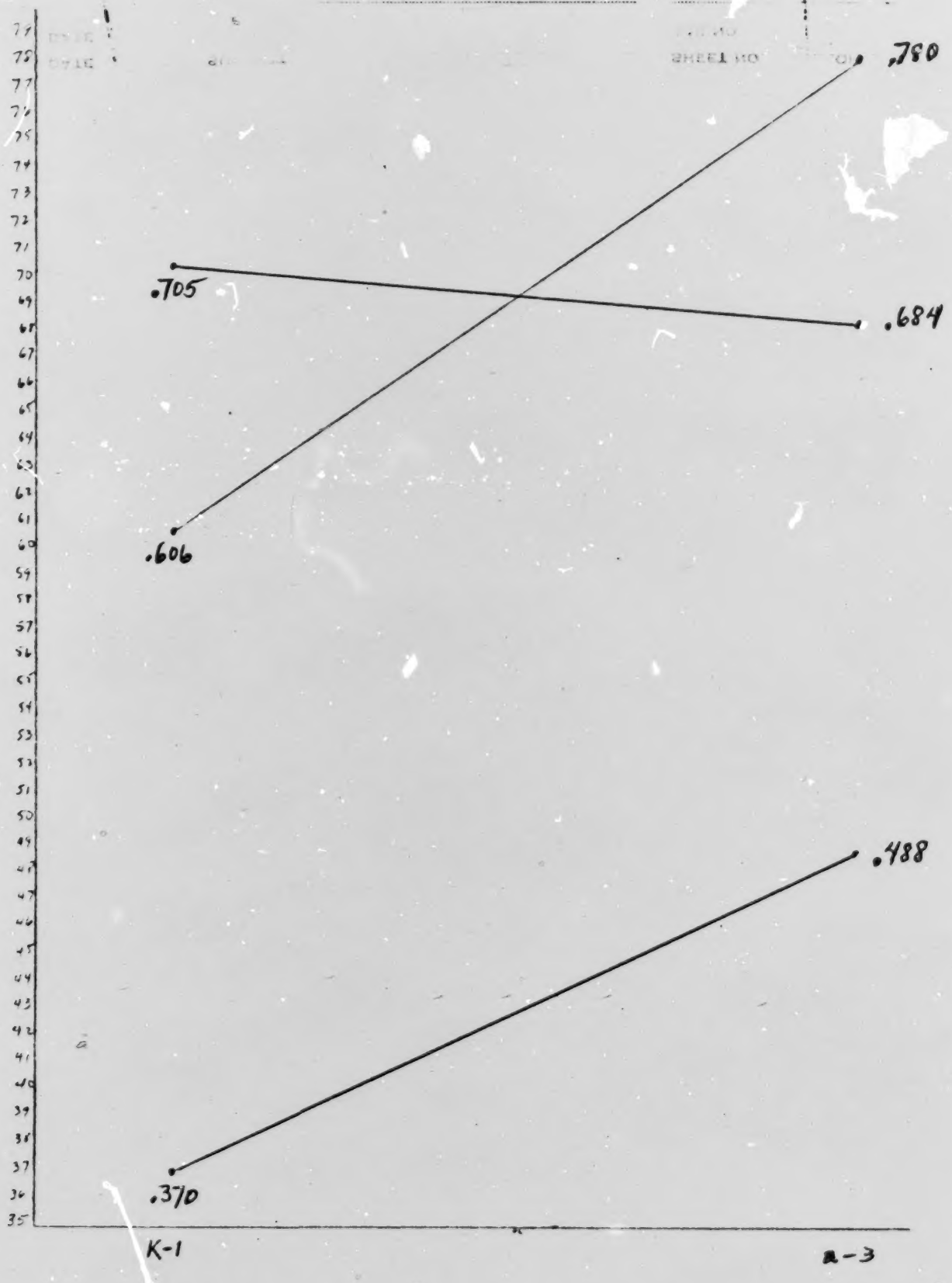
F = 2.1652

df = 5

P = .0550

Source	SS	df	MS	F	p.
Mean	42.7178	1	42.7178	807.5278	0.000
D	1.0690	2	.5345	10.1048	0.000
G	.2390	1	.2390	4.5185	0.034
DG	.6275	2	.3137	5.9313	0.003
Error	14.9176	282	.0529		

Figure 2. 'o' matching patterns



X = Nine X = Biling 16 X = Eng D.

Table 6. Proportion of correct responses to 'a' matching patterns.

	Monolingual		Bilingual		English Dominant	
	K-1	2-3	K-1	2-3	K-1	2-3
Mean	.3856	.4807	.4767	.4701	.3120	.4400
S.D.	.1959	.1584	.1947	.1739	.1219	.2167
Freq.	66	56	71	67	5	21

Bartlett test = 5.9008
F = 1.1526
df = 5
p = .3300

Source	SS	df	MS	F	P.
Mean	21.2811	1	21.2811	625.8513	0.000
D	.1998	2	.0999	2.9382	0.055
G	.1515	1	.1515	4.4580	0.036
DG	.1970	2	.0985	2.8979	0.057
Error	9.5890	282	.0340		

Figure 3. 'a' matching patterns

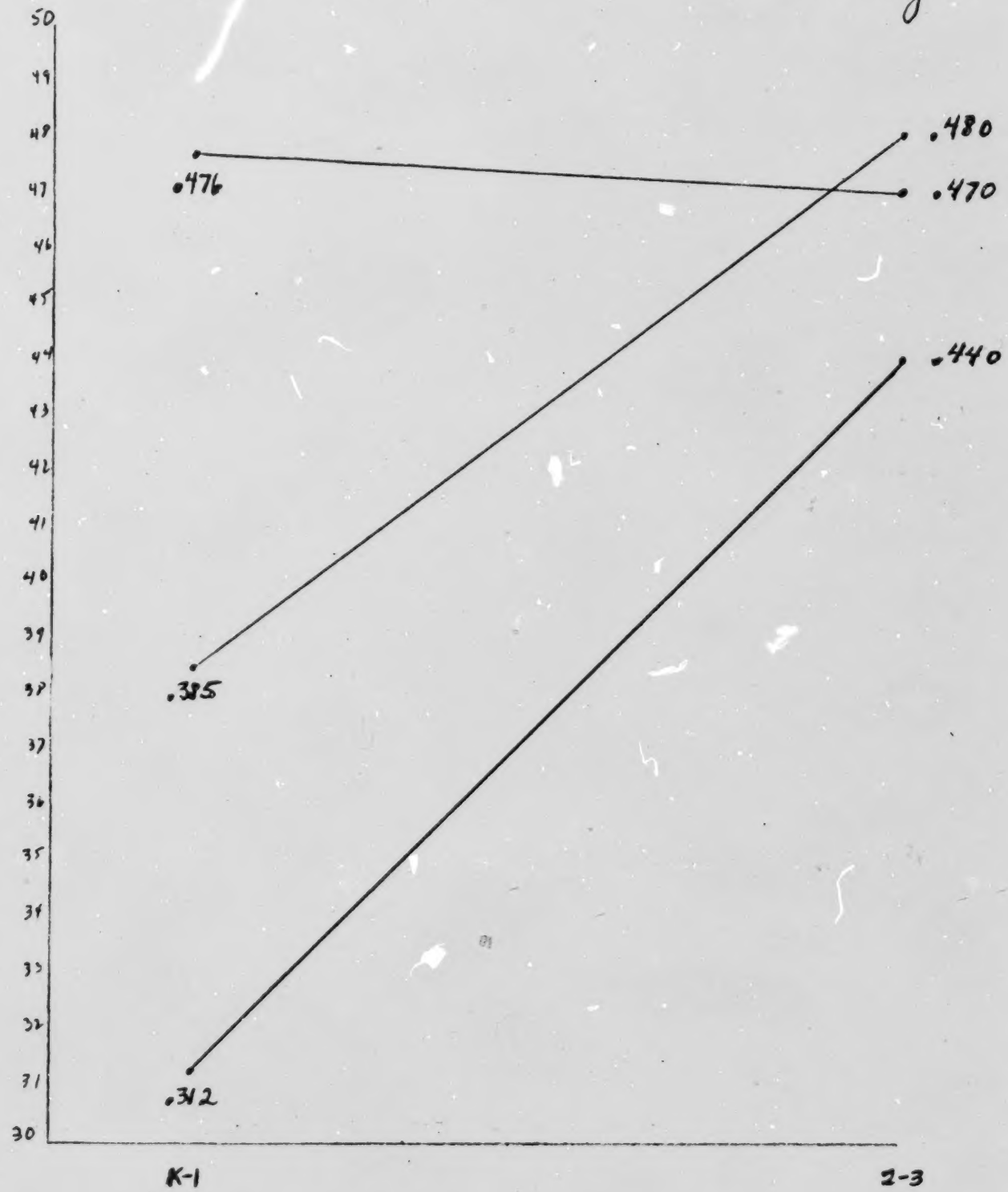


Table 7. Proportion of correct responses to all words.

	Level 1		Level 2		Level 3		Level 4		Level 5	
	PK	K	PK	K	PK	K	PK	K	PK	K
Mean	.5814	.5300	.6875	.4439	.4840	.6840	.5500	.6475	.2933	.406
S.D.	.1852	.1667	.1053	.1586	.2281	.1002	.00	.2654	.1680	.00
freq.	14	16	4	23	5	10	1	8	3	2

Source	SS	df	MS	F	p
Mean	10.4653	1	10.4653	346.0600	0.000
D	.2266	4	.0566	1.8734	0.124
G	.0044	1	.0044	.1467	0.703
DG	.3705	4	.0926	3.0633	0.021
Error	2.2983	76	.0302		

Table 8A. Same stimulus

Source	SS	df	MS	F	p
Mean	.1148	1	.1148	1324.0144	0.000
L	.0007	4	.0001	2.2411	0.065
G	.0003	3	.0001	1.1837	0.316
LG	.0013	12	0.0001	1.2836	0.228
Error	.0232	268	0.00009		

Figure 4.

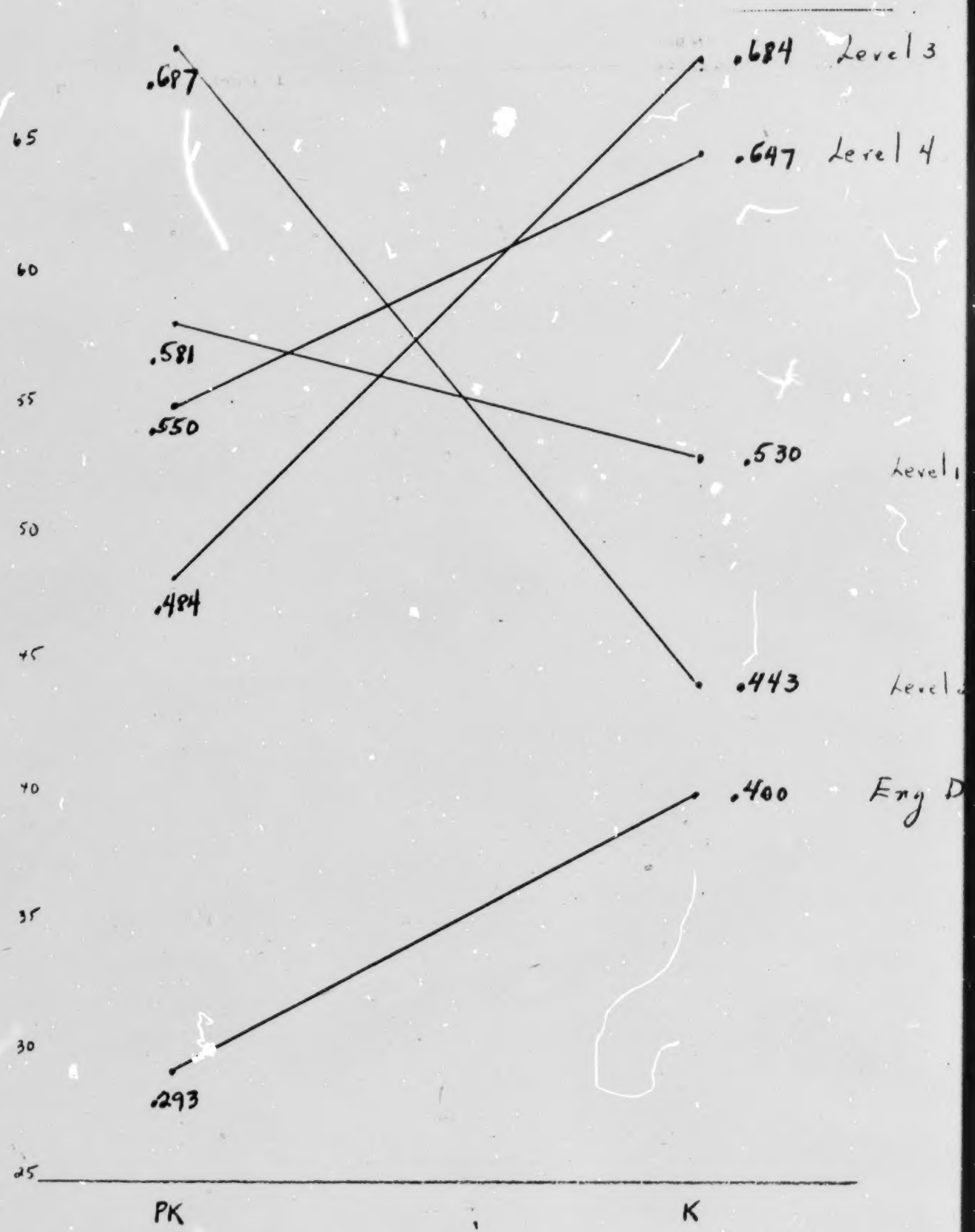

65
60
55
50
45
40
35
30
25
.687
.581
.550
.484
.293
.684
.647
.530
.443
.400
Level 3
Level 4
Level 1
Level 2
Eng D
PK
K

Table 8B. Proportion of correct responses to sets with different stimuli.

	Level 1	Level 2	Level 3	Level 4	Level 5
K Mean	.0312	.0234	.0480	.0437	.0300
SD	.0170	.0172	.0154	.0287	.0282
1 Mean	.0407	.0371	.0409	.0368	.0133
SD	.0165	.0212	.0181	.0163	.0152
2 M	.0484	.0416	.0380	.0407	.0353
SD	.0181	.0199	.0139	.0170	.0225
3 M	.0378	.0466	.0487	.0320	.0387
SD	.0143	.0143	.0180	.0212	.0064
Frequency	16	23	10	8	2
	13	14	21	32	3
	13	12	10	27	13
	19	12	8	24	8

Source	SS	df	MS	F	p.
Mean	0.2591	1	.2591	799.1413	0.000
L	0.0026	4	.0006	2.0753	0.084
G	0.0019	3	.0006	2.0284	0.110
LG	0.0083	12	.0007	2.1502	0.014
Error	0.0869	268	.0003		